

## ABSTRACT

The present invention provides improved optical wavelength switches in which no mechanical movement is required to direct optical pathways between plural fiber ports. The inventive three fiber ports devices divide the incoming optical signals into two subsets of spectrums and selectively direct them into two output ports in response to an electrical control signal. In the inventive switch, an optical signal is spatially split into two polarized beams by a birefringent element, which pass through a series polarization rotation elements and recombine into output fibers, achieving polarization independent operation. Advantageously, the inventive switches incorporate two-stage polarization rotations to improve isolation depth, as well as temperature and wavelength independence. The inventive switches also incorporate light bending devices to allow two fibers to be coupled to the light beams using a single lens achieving small beam separation for compactness. The switches of the present invention rely on electro-magnetically or electro-optically switching the beam polarizations from one state to another to rapidly direct the light path.